

# Linear Joint Seal ZZ G50





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## Linear Joint Seal ZZ G50

for fire resistance classification up to El 120

The Linear Joint Seal ZZ G50 system restores the fire resistance classification in areas of joints in rigid walls and floors. The Linear Joint Seal ZZ G50 is used to seal fire protection joints in rigid walls and rigid floors to satisfy the requirements for the fire resistance classification up to EI 120 in accordance with ETA-12/0119.



- a) Installation of two Fire Protection Joint Seal ZZ 530 in a rigid wall
- **b)** Installation of a single Fire Protection Joint Seal ZZ 530 in a rigid wall

**Especially suited for:** Expansion and movement joints with requirements for fire resistance classification up to El 120 (up to 25% lateral movement capability and 7.5% shear).

#### **Fundamentals**

- / For execution of the Linear Joint Seal ZZ G50, the European technical assessment ETA-12/0119 issued by the Austrian Institute of Construction Engineering is authoritative.
- / All technical specifications, such as permissible joint widths, wall types/floor types, fire resistance classifications, etc. are provided in the European Technical Assessment.
- / It must be ensured that the stability of the adjacent component is not impaired through installation of Linear Joint Seal ZZ G50, even in the event of fire. The information specified in the usability certification must be complied with.

- / All applicable directives and technical rules of other trades must be complied with.
- / In accordance with ETAG 026-3, the Linear Joint Seal ZZ G50 can be assigned to use category Z<sub>1</sub>. This means that the permissible ambient conditions for use of the product are indoor areas with high humidity and temperatures above 0 °C.

Permissible installation locations of the Linear Joint Seal ZZ G50 system						
Element of construction	Construction type	Classification of the component	Minimum component density			
Rigid wall	Aerated concrete, concrete, reinforced concrete, masonry	The component must be classified	600 kg/m <sup>3</sup>			
Rigid floor	Aerated concrete, concrete, reinforced concrete	in accordance with EN 13501-2	600 kg/m <sup>3</sup>			

#### System components



	Variants	Recommended minimum joint width [mm]	Max. joint width [mm] *)	Art. no.	PU
	Fire Protection Joint Seal ZZ 530-16 Ø 16 mm x length 1000 mm	10	13	B08N02-0016	1
	Fire Protection Joint Seal ZZ 530-24 Ø 24 mm x length 1000 mm	15	21	B08N02-0017	1
	Fire Protection Joint Seal ZZ 530-30 Ø 30 mm x length 1000 mm	20	27	B08N02-0018	1
1	<b>Fire Protection Joint Seal ZZ 530-39</b> Ø 39 mm x length 1000 mm	25	35	B08N02-0019	1
1	Fire Protection Joint Seal ZZ 530-49 Ø 49 mm x length 1000 mm	35	45	B08N02-0020	1
	Fire Protection Joint Seal ZZ 530-60 Ø 60 mm x length 1000 mm	40	55	B08N02-0021	1
	Fire Protection Joint Seal ZZ 530-70 Ø 70 mm x length 1000 mm	50	65	B08N02-0022	1
	Fire Protection Joint Seal ZZ 530-80 Ø 80 mm x length 1000 mm	60	75	B08N02-0023	1

\*) The information includes the max. permissible expansion of 25 % lateral and 7,5 % shear movement capability

Acc	essories				
2			10		
	Designation	Art. no.	PU		
2	Knife with serrated blade, narrow	B16H00-0042	1		
3	Knife with serrated blade, wide	B16H00-0043	1		
4	OTTOSEAL S 115, 310 ml (cement grey)	B99H00-0110	1		
5	<b>OTTO Primer 1105, 250 ml</b> B99H00-0108 1				
6	Professional dispensing gun 310 ml	B16H00-0024	1		
7	EconoMax dispensing gun (310 ml cartridge & 580 ml tubular bag)	B16H00-0052	1		
8	PowerMax dispensing gun (310 ml cartridge & 580 ml tubular bag)	B16H00-0053	1		
9	Smoothing trowel	B99H00-0161	1		
10	OTTO PE round cord B2 Ø 6–40 mm	see variants	1		

### Variants of OTTO PE round cord B2, Ø 6-40 mm

	Variants	L [m]	Art. no.	PU
	OTTO PE round cord B2 Ø 6 mm	100	B99H00-0098	1
	OTTO PE round cord B2 Ø 8 mm	100	B99H00-0099	1
	OTTO PE round cord B2 Ø 10 mm	100	B99H00-0100	1
	OTTO PE round cord B2 Ø 13 mm	100	B99H00-0101	1
10	OTTO PE round cord B2 Ø 15 mm	100	B99H00-0102	1
	OTTO PE round cord B2 Ø 20 mm	50	B99H00-0103	1
	OTTO PE round cord B2 Ø 25 mm	50	B99H00-0104	1
	OTTO PE round cord B2 Ø 30 mm	25	B99H00-0105	1
	OTTO PE round cord B2 Ø 40 mm	1	B99H00-0106	1

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#### **Overview of design variants**







**Design variant 3** 



**Design variant 4** 

#### 1. Installation of a single Fire Protection Joint Seal ZZ 530

- / Fire resistance classification: to EI 90
- / Economical solution
- / Single-side access is sufficient
- / Easy to install
- / Absorptive capability of movements between separate building components (7.5% lateral, 7.5% shear)
- / Joint widths from 40 mm to 75 mm
- / Easy to process
- / "Single-product solution". No additional material components are needed
- / Wall and floor thicknesses  $\geq$  150 mm

#### 2. Installation of two Fire Protection Joint Seal ZZ 530

- / Fire resistance classification: to EI 120
- / Time-proven design variant
- / High absorptive capability of movements between separate building components (25% lateral, 7.5% shear)
- / Joint widths from 10 mm to 60 mm (plus 25% lateral expansion)
- / Easy to process
- / "Single-product solution". No additional material components are needed
- / Wall and floor thicknesses  $\geq$  150 mm
- 3. Combination of Fire Protection Joint Seal ZZ 530 and silicone sealant
- / Fire resistance classification: to EI 120
- / Backfill of silicone sealant with PE round cord
  - / Absorptive capability of movements between separate building components (7.5% lateral, 7.5% shear)
  - / Joint widths from 10 mm to 75 mm
  - / Wall thicknesses  $\geq\!125$  mm and 150 mm, floor thicknesses  $\geq\!150$  mm
  - / Ideal for upgrading existing expansion joints to fire protection joints

#### 4. Combination of Fire Protection Joint Seal ZZ 530 and silicone sealant

- / Fire resistance classification: to EI 120
- / Backfill of silicone sealant with PE round cord
- / High absorptive capability of movements between separate building components (25% lateral, 7.5% shear)
- / Joint widths from 10 mm to 36 mm (plus 25% lateral expansion)
- / Construction joint in accordance with DIN 18540 or ISO 11600 with use of a suitable silicone sealant
- / Wall thicknesses  $\geq$  125 mm, floor thicknesses  $\geq$  150 mm
- / Ideal for upgrading existing expansion joints to fire protection joints

#### **Design variant 1**

#### Installation of a single Fire Protection Joint Seal ZZ 530



- / Fire resistance classification: to EI 90
- / Economical solution
- / Single-side access is sufficient
- / Easy to install
- / Absorptive capability of movements between separate building components (7.5% lateral, 7.5% shear)
- / Joint widths from 40 mm to 75 mm
- / Easy to process
- / "Single-product solution". No additional material components are needed
- / Wall and floor thicknesses  $\geq$  150 mm



- / Lateral and shear movement capability 7,5%
- / Maximum joint width 75 mm (including 7.5% expansion; no further expansion possible)
- / Minimum joint width 40 mm
- / Minimum wall thickness 150 mm
- / The joint seal consists of a Fire Protection Joint Seal ZZ 530

Insertion depth	
Joint width b *)	Insertion depth t *)
40 mm to 55 mm	≥45 mm
65 mm	≥22.5 mm
75 mm	≥0 mm

\*) Note: Intermediate values can be interpolated

#### Application: Horizontal joint in rigid walls abutting a floor, ceiling or roof



- / Lateral and shear movement capability 7,5%
- / Maximum joint width 75 mm (including 7.5% expansion; no further expansion possible)
- / Minimum joint width 40 mm
- / Minimum wall thickness 150 mm
- / The joint seal consists of a Fire Protection Joint Seal ZZ 530

### Overview of the fire resistance classification and the maximum joint widths in rigid walls

(vertical arrangement)

Element of construction	Wall thickness c [mm]	Variant of Fire Protection Joint Seal ZZ 530	Recommended minimum joint width [mm]	Max. joint width b (incl. expansion)	Fire resistance classification (for explanation see p. 25)
		ZZ 530-60	40 mm	55 mm	
Rigid wall	≥150	ZZ 530-70	50 mm	65 mm	EI15- to EI90-V-X-F-W 55 to 75 or EI15- to EI90-T-X-F-W 55 to 75
		ZZ 530-80	60 mm	75 mm	



- / Lateral and shear movement capability 7,5%
- / Maximum joint width 75 mm (including 7.5% expansion; no further expansion possible)
- / Minimum joint width 40 mm
- / Minimum floor thickness 150 mm
- / The joint seal consists of a Fire Protection Joint Seal ZZ 530

Insertion depth	
Joint width b *)	Insertion depth t*)
40 mm to 55 mm	≥45 mm
65 mm	≥22.5 mm

\*) Note: Intermediate values can be interpolated

### Overview of the fire resistance classification and the maximum joint widths in rigid floors

(horizontal arrangement)

Element of construction	Floor thickness c [mm]	Variant of Fire Protection Joint Seal ZZ 530	Recommended minimum joint width [mm]	Max. joint width b (incl. expansion)	Fire resistance classification (for explanations see p. 25)
		ZZ 530-60	40 mm	55 mm	
Rigid floor	≥150	ZZ 530-70	50 mm	65 mm	EI15- to EI60-H-X-F-W 55 to 75 or EI15- to EI90-H-X-F-W 75
		ZZ 530-80	60 mm	75 mm	

≥0 mm

75 mm

#### **Design variant 2**

#### Installation of two Fire Protection Joint Seals ZZ 530



- / Fire resistance classification: to EI 120
- / Time-proven design variant
- / High absorptive capability of movements between separate building components (25% lateral, 7.5% shear)
- / Joint widths from 10 mm to 60 mm (plus 25% lateral expansion)
- / Easy to process
- / "Single-product solution". No additional material components are needed
- / Wall and floor thicknesses  $\geq$  150 mm

#### Application: Vertical joints in/between rigid walls



- / Lateral and shear movement capability 7,5%
- / Maximum joint width 60 mm (i.e. max. joint width 75 mm incl. 25% lateral expansion)
- / Minimum joint width 10 mm
- / Minimum wall thickness 150 mm
- / The joint seal consists of two Fire Protection Joint Seals ZZ 530

#### Application: Horizontal joints in rigid walls abutting a floor, ceiling or roof



- / Lateral movement capability 25%, shear movement capability 7,5%
- / Maximum joint width 60 mm (i.e. max. joint width 75 mm incl. 25% lateral expansion)
- / Minimum joint width 10 mm
- / Minimum wall thickness from 150 mm
- / The joint seal consists of two Fire Protection Joint Seals ZZ 530

# **Overview of the fire resistance classification and the maximum joint widths in rigid walls** (vertical arrangement)

Element of construction	Wall thickness/ total joint thickness c [mm]	Variant of Fire Protection Joint Seal ZZ 530	Recommended minimum joint width [mm]	Max. joint width b (incl. 25 % expansion)	Fire resistance classification (For explanations see p. 25)
		ZZ 530-16	10 mm	12.5 mm	
		ZZ 530-24	15 mm	20 mm	
Rigid wall	≥150	ZZ 530-30	20 mm	26 mm	
		ZZ 530-39	25 mm	35 mm	EI15- to EI120-V-M025-F-W 10 to 60 or
		ZZ 530-49	35 mm	45 mm	EI15- to EI120-T-M025-F-W10 to 60
		ZZ 530-60	40 mm	55 mm	
		ZZ 530-70	50 mm	65 mm	
		ZZ 530-80	60 mm	75 mm	



- / Lateral movement capability 25%, shear movement capability 7,5%
- / Maximum joint width 60 mm (i.e. max. joint width 75 mm incl. 25% lateral expansion)
- / Minimum joint width 10 mm
- / Minimum floor thickness 150 mm
- / The joint seal consists of two Fire Protection Joint Seals ZZ 530

### Overview of the fire resistance classification and the maximum joint widths in rigid floors (horizontal arrangement)

Element of construction	Floor thickness/ total joint thickness c [mm]	Variant of Fire Protection Joint Seal ZZ 530	Recommended minimum joint width [mm]	Max. joint width b (incl. 25 % expansion)	Fire resistance classification (For explanations see p. 25)
		ZZ 530-16	10 mm	12.5 mm	
<b>Rigid floor</b> ≥ 150		ZZ 530-24	15 mm	20 mm	
	ZZ 530-30	20 mm	26 mm		
	>150	ZZ 530-39	25 mm	35 mm	EI15- to EI120-H-M025-F-W 10 to 60
	ZZ 530-49	35 mm	45 mm		
		ZZ 530-60	40 mm	55 mm	
		ZZ 530-70	50 mm	65 mm	
		ZZ 530-80	60 mm	75 mm	

#### **Design variant 3**

#### Combination of Fire Protection Joint Seal ZZ 530 and silicone sealant



- / Fire resistance classification: to EI 120
- / Backfill of silicone sealant with PE round cord
- / Absorptive capability of movements between separate building components (7.5% lateral, 7.5% shear)
- / Joint widths from 10 mm to 75 mm
- / Wall thicknesses  $\geq$  125 mm and 150 mm, floor thicknesses  $\geq$  150 mm
- / Ideal for upgrading existing expansion joints to fire protection joints

#### Application: Vertical joint in/between rigid walls



- / Lateral and shear movement capability 7,5%
- / Maximum joint width 75 mm (including 7.5% expansion; no further expansion possible)
- / Minimum joint width 10 mm
- / Minimum wall thickness for EI 90: 125 mm, minimum wall thickness for EI 120: 150 mm
- / The joint seal consists of a Fire Protection Joint Seal ZZ 530 and a PE round cord or mineral wool sealed with silicone sealant
- / Minimum depth of backfill  $\geq$  10 mm (PE round cord or mineral wool)

Minimum fill depth with silicone sealant (see also "Correctly dimensioning and producing joints")				
Joint width b	Minimum fill depth s (see also "Correctly dimensioning and producing joints")			
≤ <b>27</b> mm	≥6 mm			
≥ <b>27</b> mm	≥10 mm			

#### Application: Horizontal joint in rigid walls abutting a floor, ceiling or roof



- / Lateral and shear movement capability 7,5%
- / Maximum joint width 75 mm (including 7.5% expansion; no further expansion possible)
- / Minimum joint width 10 mm
- / Minimum wall thickness for EI 90: 125 mm, minimum wall thickness for EI 120: 150 mm
- / The joint seal consists of a Fire Protection Joint Seal ZZ 530 and a PE round cord or mineral wool sealed with silicone sealant
- / Minimum depth of backfill  $\geq$  10 mm (PE round cord or mineral wool)

Overview of the fire resistance classification and the maximum joint widths in rigid walls d  $\geq$  125 mm (vertical arrangement)

Element of construction	Wall thickness/ total joint thickness c [mm]	Variant of Fire Protection Joint Seal ZZ 530	Recommended minimum joint width [mm]	Max. joint width b (incl. 7.5% expansion)	Fire resistance classification (For explanation see p. 25)	
Rigid wall	≥125	ZZ 530-16	10 mm	13 mm		
		ZZ 530-24	15 mm	20 mm		
		ZZ 530-30	20 mm	26 mm		
		> 105	ZZ 530-39	25 mm	35 mm	EI15- to EI90-V-X-F-W 10 to 75 or
		ZZ 530-49	35 mm	45 mm	EI15- to EI90-T-X-F-W 10 to 75	
		ZZ 530-60	40 mm	55 mm		
		ZZ 530-70	50 mm	65 mm		
		ZZ 530-80	60 mm	75 mm		

# Overview of the fire resistance classification and the maximum joint widths in rigid walls d $\geq$ 150 mm (vertical arrangement)

Element of construction	Wall thickness/ total joint thickness c [mm]	Variant of Fire Protection Joint Seal ZZ 530	Recommended minimum joint width [mm]	Max. joint width b (incl. 7.5 % expansion)	Fire resistance classification (For explanation see p. 25)	
Rigid wall		ZZ 530-16	10 mm	13 mm		
		ZZ 530-24	15 mm	20 mm		
	≥150	ZZ 530-30	20 mm	26 mm		
		> 150	ZZ 530-39	25 mm	35 mm	EI15- to EI120-V-X-F-W 10 to 75 or
		ZZ 530-49	35 mm	45 mm	EI15- to EI120-T-X-F-W 10 to 75	
		ZZ 530-60	40 mm	55 mm		
		ZZ 530-70	50 mm	65 mm		
		ZZ 530-80	60 mm	75 mm		

#### Application: Horizontal joint in/between rigid floors



- / Lateral and shear movement capability 7,5%
- / Maximum joint width 75 mm (including 7.5% expansion; no further expansion possible)
- / Minimum joint width 10 mm
- / Minimum floor thickness 150 mm
- / The joint seal consists of a Fire Protection Joint Seal ZZ 530 and a PE round cord or mineral wool sealed with silicone sealant
- / Minimum depth of backfill  $\geq$  10 mm (PE round cord or mineral wool)

Minimum fill depth with silicone sealant (see also "Correctly dimensioning and producing joints")						
Joint width b	Minimum fill depth s (see also "Correctly dimensioning and producing joints")					
≤27 mm	≥6 mm					
≥27 mm	≥ 10 mm					

### Overview of the fire resistance classification and the maximum joint widths in rigid floors

(horizontal arrangement)

Element of construction	Floor thickness/ total joint thickness c [mm]	Variant of Fire Protection Joint Seal ZZ 530	Recommended minimum joint width [mm]	Max. joint width b (incl. 7.5 % expansion)	Fire resistance classification (For explanations see p. 25)	
Rigid floor	≥150	ZZ 530-16	10 mm	13 mm		
		ZZ 530-24	15 mm	20 mm		
		ZZ 530-30	20 mm	26 mm		
		> 150	ZZ 530-39	25 mm	35 mm	EI15 to EI120 H X E W 10 to 75
		ZZ 530-49	35 mm	45 mm	EII5- to EII20-n-A-F-W 10 to 75	
		ZZ 530-60	40 mm	55 mm		
		ZZ 530-70	50 mm	65 mm		
		ZZ 530-80	60 mm	75 mm		

#### **Design variant 4**

#### Combination of Fire Protection Joint Seal ZZ 530 and silicone sealant

- / Fire resistance classification: to El 120
- / Backfill of silicone sealant with PE round cord
- / High absorptive capability of movements between separate building components (25 % lateral, 7.5 % shear)
- / Joint widths from 10 mm to 36 mm (plus 25% lateral expansion)
- / Construction joint in accordance with DIN 18540 or ISO 11600 with use of a suitable silicone sealant
- / Wall thicknesses  $\geq$  125 mm, floor thicknesses  $\geq$  150 mm
- / Ideal for upgrading existing expansion joints to fire protection joints

#### Application: Vertical joint in/between rigid walls



- / Lateral movement capability 25%, shear movement capability 7,5%
- / Maximum joint width 36 mm (i.e. max. joint width 45 mm incl. 25% lateral expansion)
- / Minimum joint width 10 mm
- / Minimum wall thickness 125 mm
- / The joint seal consists of a Fire Protection Joint Seal ZZ 530 and a PE round cord or mineral wool sealed on both sides with silicone sealant
- / Minimum depth of backfill  $\geq$  10 mm (PE round cord or mineral wool)

Minimum fill depth with silicone sealant (see also "Correctly dimensioning and producing joints")					
Joint width b	Minimum fill depth s (see also "Correctly dimensioning and producing joints")				
≤ <b>27</b> mm	≥6 mm				
≥27 mm	≥10 mm				

### Application: Horizontal joint in rigid walls abutting a floor, ceiling or roof



- / Lateral movement capability 25%, shear movement capability 7,5%
- / Maximum joint width 36 mm (i.e. max. joint width 45 mm incl. 25% lateral expansion)
- / Minimum joint width 10 mm
- / Minimum wall thickness 125 mm
- / The joint seal consists of a Fire Protection Joint Seal ZZ 530 and a PE round cord or mineral wool sealed on both sides with silicone sealant
- / Minimum depth of backfill  $\geq$  10 mm (PE round cord or mineral wool)

# Overview of the fire resistance classification and the maximum joint widths in rigid walls (vertical arrangement)

Element of construction	Wall thickness/ total joint thickness c [mm]	Variant of Fire Protection Joint Seal ZZ 530	Recommended minimum joint width [mm]	Max. joint width b (incl. 25 % expansion)	Fire resistance classification (For explanations see p. 25)
	≥125	ZZ 530-16	10 mm	12.5 mm	
Rigid wall		ZZ 530-24	15 mm	20 mm	EI15- to EI120-V-M025-F-W 10 to 36
		ZZ 530-30	20 mm	26 mm	or EI15- to EI120-T-M025-F-W 10 to 36
		ZZ 530-39	25 mm	35 mm	
				ZZ 530-49	35 mm



#### Application: Horizontal joint in/between rigid floors

- / Lateral movement capability 25%, shear movement capability 7,5%
- / Maximum joint width 36 mm (i.e. max. joint width 45 mm incl. 25% lateral expansion)
- / Minimum joint width 10 mm
- / Minimum floor thickness 150 mm
- / The joint seal consists of a Fire Protection Joint Seal ZZ 530 and a PE round cord or mineral wool sealed on both sides with silicone sealant
- / Minimum depth of backfill  $\geq$  10 mm (PE round cord or mineral wool)

Minimum fill depth with silicone sealant (see also "Correctly dimensioning and producing joints")					
Joint width b	Minimum fill depth s (see also "Correctly dimensioning and producing joints")				
≤27 mm	≥6 mm				
≥ <b>27</b> mm	≥10 mm				

# **Overview of the fire resistance classification and the maximum joint widths in rigid floors** (horizontal arrangement)

Element of construction	Floor thickness/ Overall seal depth c [mm]	Variant Fire Protection Joint Seal ZZ 530	Recommended minimum joint width [mm]	Max. joint width b (incl. 25% expansion)	Fire resistance classification (For explanations see p. 25)
Rigid floor		ZZ 530-16	10 mm	12.5 mm	
	≥150	ZZ 530-24	15 mm	20 mm	
		ZZ 530-30	20 mm	26 mm	EI15 to EI120-H-M025-F-W 10 to 36
		ZZ 530-39	25 mm	35 mm	
		ZZ 530-49	35 mm	45 mm	



#### Installation steps

The assessment, ETA-12/0119 and the respective national regulations are authoritative for execution of the Fire Protection Joint Seal ZZ 530.

- Before installation clean the joint flanks. Material that is located in the joint can remain, with the prerequisite that the Fire Protection Joint Seal ZZ 530 can be inserted into the component completely and as prescribed from both sides or on one side.
- Use the Fire Protection Joint Seal ZZ 530 that is suitable for the joint width. Check whether the movements of the joint flanks can be absorbed by the Fire Protection Joint Seal ZZ 530 (see above).
- The Fire Protection Joint Seal ZZ 530 must be compressed in width and pushed into the component joint. In this process, the Fire Protection Joint Seal ZZ 530 must not be twisted or overstretched. Fire Protection Joint Seal ZZ 530 must be butt-jointed together; bonding is not necessary.
- 4. Mount the required number of Fire Protection Joint Seal ZZ 530 in accordance with the specifications of the design variant. The specified insertion depth for design variant 1 must be observed.
- 5. For design variants 3 and 4, an additional silicone sealant is used. The basic rules for creating silicone joints must be observed (for more information, refer to "Correctly dimensioning and producing joints"). The required minimum fill depths must be observed. A suitable backfill material must be used. PF round cords. are recommended for this purpose. In design variant 4 the Fire Protection Joint Seal ZZ 530 serves as backfill for the silicone sealant. Good contact between the silicone sealant and the joint flanks must be established through pressing and smoothing, e.g. with a smoothing trowel and a suitable smoothing product. It may be necessary to pre-treat the joint flanks with a wash primer. We recommend silicone sealants that are tested in accordance with DIN 18540 or ISO 11600.

#### Movement capability of the Fire Protection Joint Seal ZZ 530

The movement capability of the Fire Protection Joint Seal ZZ 530 is limited in accordance with ETA-12/0119 depending on the design variant. The movement capability is defined as an absolute amount, starting from the tension free zero position. **Example:** A movement capability of 20% permits movements of the joint of +/-10% or -5% (compression) and +15% (expansion).

#### Calculation of the permissible lateral displacement of two joint flanks



x = Permissible lateral displacement (expansion/compression) of two joint flanks [mm]

w = Nominal joint width [mm]

mc = Movement capability (lateral expansion) of the joint seal [%]

#### Calculation of the permissible vertical displacement of two joint flanks



x = Permissible vertical displacement (shear) of two joint flanks [mm]

w = Nominal joint width [mm]

mc = Movement capability (shear) of the joint seal [%]

#### Explanation of the fire resistance classification

EI 120	Compliance with the criterion for integrity and temperature insulation over a period of at least 120 minutes
V/H/T	Vertical or horizontal (connection on floors) joint in walls or horizontal joint in floors
M025	Movement capability 25%
х	Movement capability, maximum values around tension-free zero position 7.5 $\%$ to $-7.5\%$
F	Produced on site
W 10 to 75	Range of the permissible joint widths in mm

#### Additional protection of the joint through use of a silicone sealant

For protection against contamination or moisture, or for aesthetic reasons, joints consisting of a Fire Protection Joint Seal ZZ 530 are generally sealed with a silicone sealant and therefore upgraded to a construction joint (in accordance with DIN 18540 or ISO 11600) (see below).

#### Reasons for an additional seal include:

As a suitable sealant we recommend: / OTTOSEAL S 115 (silicone)

- / Irregular joint flanks
- / Different colour scheme of the joint
- / For protection against moisture or dust

#### Recommended silicone sealant in combination with Fire Protection Joint Seal ZZ 530

/ For design variants 3 and 4 and for upgrading a fire protection joint seal to a construction seal in accordance with DIN 18540-F, the use of the silicone sealant OTTOSEAL S 115 is recommended. OTTOSEAL S 115 is additionally tested in accordance with EN 15651-1: F EXT-INT CC 25 LM and EN 15651-3: XS 1

For use, also comply with the product instructions provided by the manufacturer and with following execution instructions.

#### Correctly dimensioning and producing joints



#### Collectively the following rules should be complied with as a rule of thumb for proper dimensioning of the joint:

Joint fill depth s = 0.5 \* joint width b Minimum joint fill depth s  $\geq$  6 mm Maximum joint fill depth s  $\leq$  15 mm

If the selected fill depth of the sealant is insufficient, its mechanical stability is reduced. If possible, expansion joints should not be narrower than 10 mm. The thickness of the joint sealant should be greater on the joint flank than it is in the middle of the joint. Thus the forces that occur in the event of expansion, can be introduced into the joint flank over a larger contact surface. Therefore adhesion cracks on the joint flank are prevented. It must be ensured that the substrate on which the silicone should adhere, has sufficient loadbearing capability and can absorb the forces that can occur with expansion movements and shear movements. The surface of the joint flanks must be free of dust, sand, grease, oil, (e.g. formwork oil), cement laitance and paint residues.

To improve the adhesion of silicone sealants on mineral materials, (e.g. concrete, aerated concrete) and on absorbent materials (e.g. gypsum, fibre cement), the joint flanks must be pre-treated with a wash primer (e.g. Otto Primer 1105). Thorough preparation of the joint flanks is important particularly in the case of high mechanical stress of the joint seal in the form of lateral movements and shear movements.

Lateral joint fill depth d3 = 2/3 \* joint width b

(Source: Industrieverband Dichtstoffe e.V.)

Joint depth	Joint width [mm]											
[mm]	5	6	7	8	10	12	15	20	25	30	35	40
5	12.4	10.3	8.8	7.7	6.2	5.1	4.1	3.1	2.4	2.0	1.7	1.5
6	10.3	8.6	17.3	6.4	5.1	4.3	3.4	2.5	2.0	1.7	1.4	1.2
7	8.8	7.3	6.3	5.5	4.4	3.6	2.9	2.2	1.7	1.4	1.2	1.1
8	7.7	6.4	5.5	4.6	3.8	3.2	2.5	1.9	1.5	1.2	1.1	0.9
10	6.2	5.1	4.4	3.8	3.1	2.5	2.0	1.5	1.2	1.0	0.8	0.7
12	5.1	4.3	3.6	3.2	2.5	2.1	1.7	1.2	1.0	0.8	0.7	0.6
15	4.1	3.4	2.9	2.5	2.0	1.7	1.3	1.0	0.8	0.6	0.5	0.5

#### Calculation scheme: Running metre per cartridge, each 310 ml

This calculation scheme does not take any fluctuations of the joint geometry into account or any material loss that occurs when smoothing the joint. Consequently, we always recommend that you plan with material requirements that are higher than shown in the calculation.

Product data: Fire Protection Joint Seal ZZ 530						
Reaction to fire in accordance with DIN EN 13501-1:	Class E					
Transport/storage:	Dry, protected from dust and only in the original packaging					
Thermal conductivity:	$\lambda = 0.103 \text{ W/(m*K)},  Test standard: DIN EN 12667$					

#### Supplemental national requirements

#### Germany

/ After the tasks have been concluded a written confirmation of conformance must be given to the client.

Testing the fire protection properties under environmental influences

Permissible ambient conditions:

In accordance with ETAG 026-3:

Use category  $Z_1$ Products for use in indoor areas with high humidity and temperatures above 0 °C.

#### Link to Declaration of Performance

System component

Fire Protection Joint Seal ZZ 530

http://www.z-z.de/downloads

Link

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